

## OCEANS

Five great oceans cover 70% of our planet. They affect our history, and they are very important to our life today.

This book looks at the plants and animals that live in these oceans. It also points out the importance of protecting them, and how we should do this.

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- Level 1 | 380 Headwords
- Level 2 | 580 Headwords
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- Level 4 | 1000 Headwords



3

TEACHER'S BOOK

# OCEANS

Robert Quinn

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Answers



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Dados Internacionais de Catalogação na Publicação (CIP)  
(Câmara Brasileira do Livro, SP, Brasil)

Quinn, Robert  
Oceans standfor graded readers, level 3 /  
Robert Quinn, illustrated by Rôdrigo  
Figueiredo. — 1 ed. — São Paulo : FTD,  
2016

ISBN 978-85-95-00513-5 (aluno)

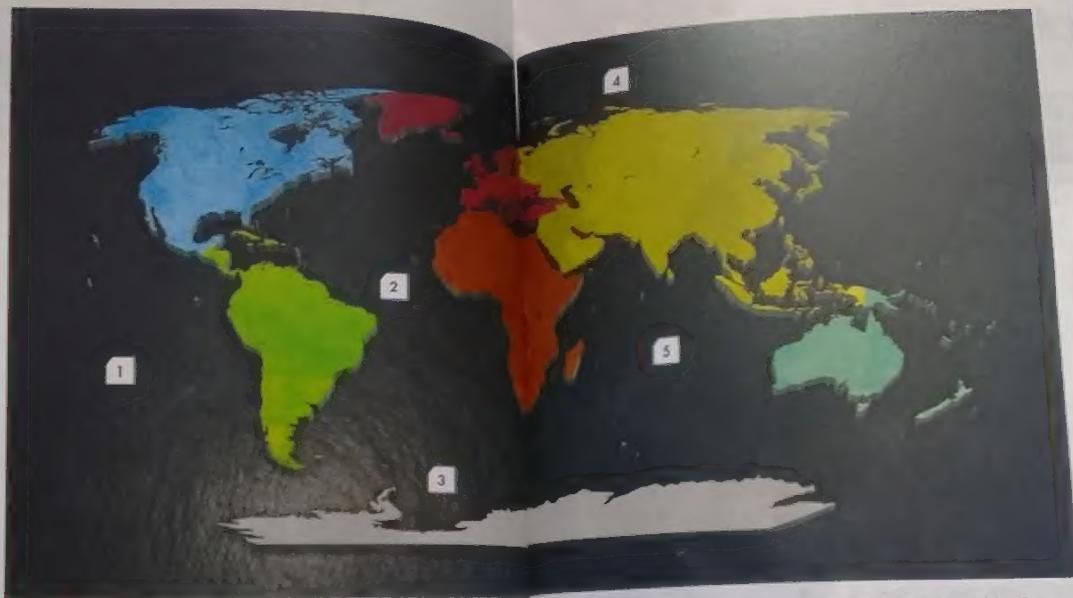
1 Literatura infantiljuvenil I. Figueiredo, Rodrigo. II. Título.

Índices para catálogos

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## OCEANS





A Match the oceans with the numbers (1–5) on the map.

- a. Arctic Ocean 4
- b. Atlantic Ocean 2
- c. Indian Ocean 5
- d. Pacific Ocean 1
- e. Southern Ocean 3

A Answer the questions about the map.

1. Which ocean is between Africa and the Americas?

Atlantic Ocean

2. Which two oceans are probably the coldest?

Arctic Ocean and Southern Ocean

3. Which ocean is to the south of the Asian continent?

Indian Ocean

4. Which ocean looks bigger – the Pacific or the Atlantic?

Pacific Ocean

5. Which continent only borders on two oceans?

Europe

# Earth's Oceans

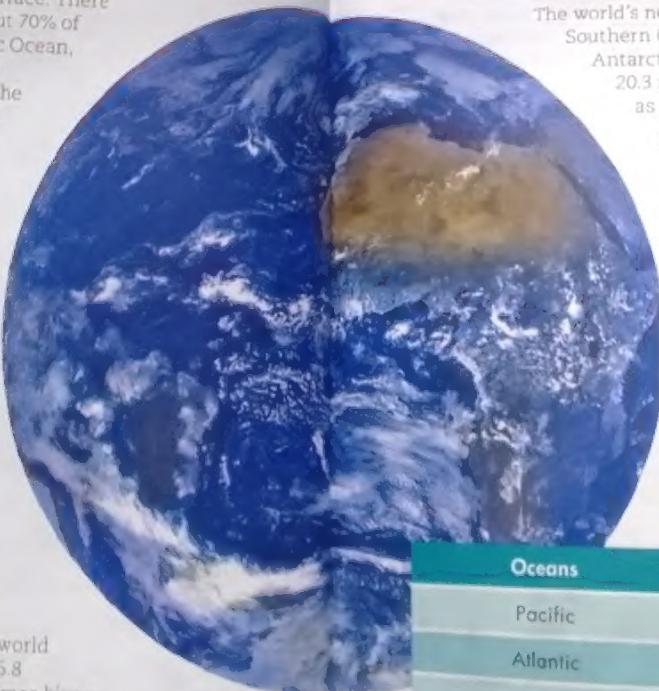
Chapter

1

From space, Earth looks very blue because there is a lot of water on its surface. There are five oceans that cover about 70% of the planet. They are the Pacific Ocean, the Atlantic Ocean, the Indian Ocean, the Arctic Ocean, and the Southern Ocean. These oceans hold about 97% of Earth's water, but it is salt water so we cannot drink it. The other 3% of Earth's water is fresh water. It isn't salty so people can drink it. We find fresh water in lakes, in rivers, and under the Earth's surface.

The Pacific Ocean is the largest ocean in the world. It covers 155.5 million km<sup>2</sup>. That is about five times bigger than the continent of Africa. The northern part of the Pacific Ocean is between Asia and North America. The southern part of the Pacific Ocean is between Australia and South America.

The second largest ocean in the world is the Atlantic Ocean. It covers 76.8 million km<sup>2</sup>. That is about four times bigger than the continent of South America. The Atlantic Ocean is between North and South America in the west, and Africa and Europe in the east.



The Indian Ocean is the third largest ocean in the world. It is south of Asia, between the continents of Africa and Australia. The Indian Ocean covers 68.6 million km<sup>2</sup>. That is about four times bigger than Russia.

The world's next largest ocean is the Southern Ocean, around the continent of Antarctica. The Southern Ocean covers 20.3 million km<sup>2</sup>. That is about twice as big as Europe.

Finally, the Arctic Ocean is the smallest ocean in the world. It covers 14.1 million km<sup>2</sup> around the North Pole. That is about seven times bigger than the island of Greenland.

How much of Earth's surface do the five oceans cover?

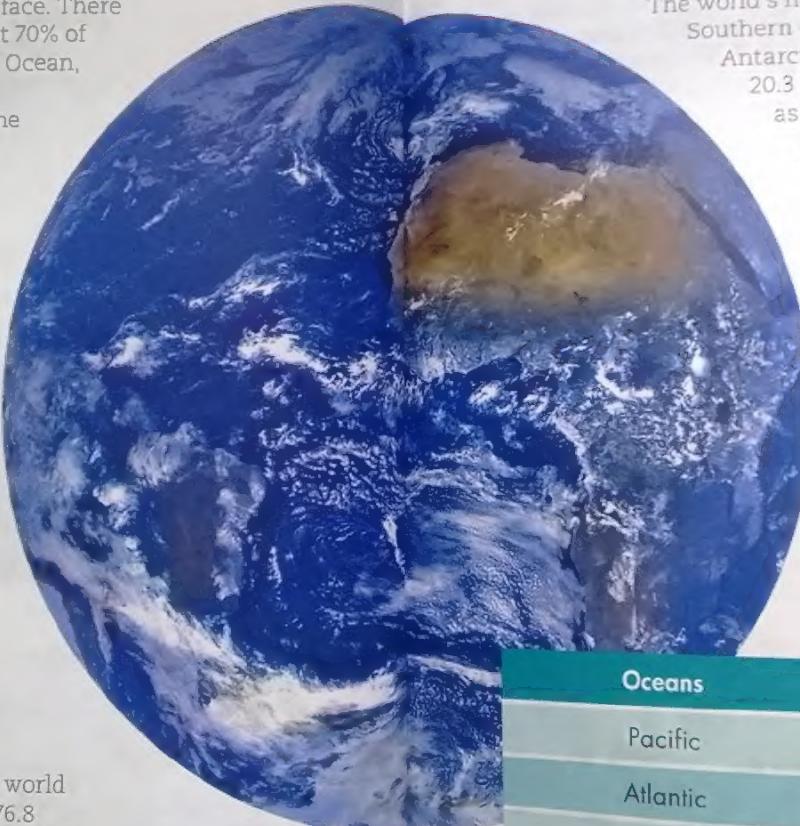
Oceans	%
Pacific	30.5%
Atlantic	15.1%
Indian	13.5%
Southern	4.0%
Arctic	2.8%

# Earth's Oceans

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Earth is  
our planet

1

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Oceans	%
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Atlantic	15.1%
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Southern	4.0%
Arctic	2.8%



In some places, oceans are very shallow. We can see the bottom easily when we go swimming or diving. The ocean is often shallow near the coast of a continent. This area is called the continental shelf.

In tropical oceans, we often find coral reefs in shallow water. In these areas, the water is warm and lots of sunlight shines through the water to the ocean floor. As a result, many plants and animals can live in these areas.

In other places, the ocean is very deep. For example, in the middle of the Pacific, the ocean floor is thousands of meters under the water. At the bottom, there is no sunlight and it is very cold, so plants cannot grow there.

The deepest underwater place in the world is Challenger Deep. It is in the Pacific Ocean, about 11,000 meters under the water. Challenger Deep is at the bottom of a very deep place called the Mariana Trench.

In 1960, two scientists wanted to visit Challenger Deep. They used a special ship called a bathyscaphe. It took them four hours and forty-seven minutes to go down to the bottom of the trench. In 2012, the film director James Cameron visited Challenger Deep in a ship called *Deepsea Challenger*. Then he made a film about the trench.

There are also very big mountains under the ocean. The biggest is Mauna Kea, on the island of Hawaii. It is 10,000 meters tall, from the ocean floor to the top of the mountain. About 5,800 meters of the mountain are under water.

The world's longest mountain range is under water, too. It's called the Mid-Atlantic Ridge and it's about 16,000 kilometers long. This mountain range goes down the middle of the Atlantic, from the Arctic Ocean to the Southern Ocean.

# Oceans and Weather

Chapter

2



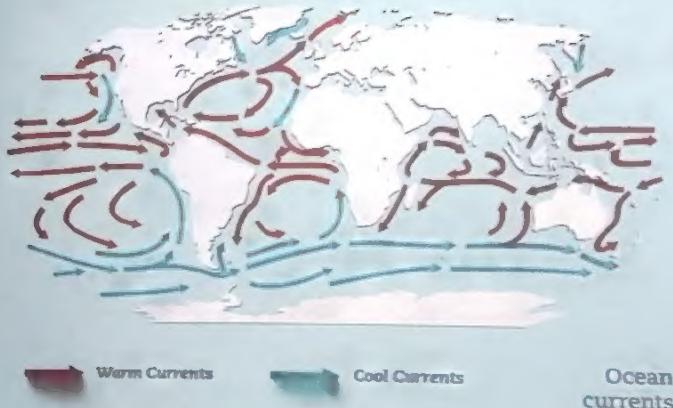
Oceans are important to weather around the world. For example, oceans can affect temperature, rain, and winds.

During the day, the sun shines on the oceans. The water becomes warmer, especially in the shallow areas near continents. In deeper areas, only water near the surface gets warm, but water near the bottom stays cold. At night, the surface of the ocean gets colder when the heat goes up into the air. These changes in temperature affect the weather on land, especially near the coast.

The areas near Earth's Equator are called the Tropics. They get more sunlight all year, so the ocean is warmer there. The areas near the North Pole and the South Pole are called polar zones. They are far from the Equator,

so they don't get as much sunlight. Because of this, ocean water is much colder in the polar zones.

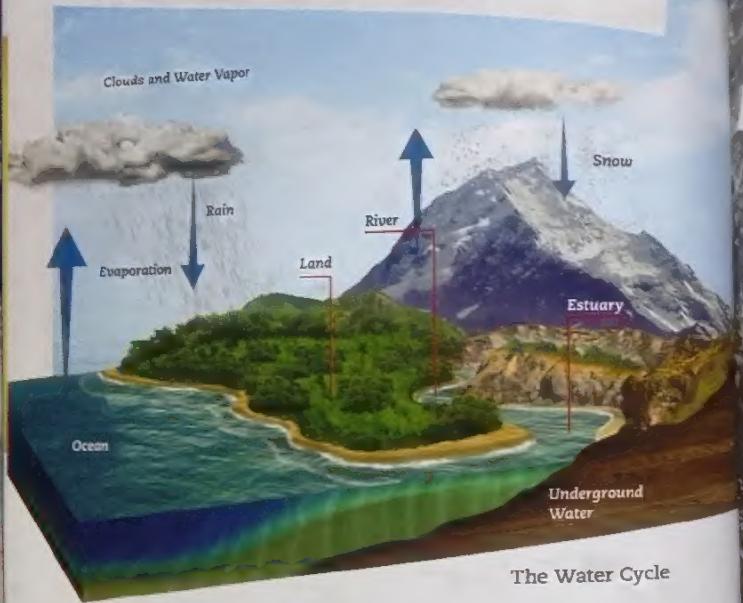
Differences in temperature can move the water in the ocean and make currents. Warm ocean currents usually move from the tropical zones toward the North Pole or the South Pole. Cold ocean currents usually move from the polar zones toward the Equator. Strong winds can also make ocean currents.



Some ocean currents can affect the weather far from the coast. For example, the Gulf Stream is a very strong current in the Atlantic Ocean. It takes warm water from the Gulf of Mexico to the Arctic Ocean. The Gulf Stream has a very important effect on Western Europe. It makes the weather warmer there, especially during the winter.

In the South Atlantic, there is an ocean current called the Brazil Current. It takes warm water south, along the eastern coast of Brazil, and on to Argentina. There is also a North Brazil Current along the northeast coast of Brazil. It takes warm water from the Equator towards the Caribbean Sea.

Oceans also affect weather because they are part of the water cycle. When ocean water is warm, it evaporates. This means water vapor goes into the air and makes clouds. When the air gets colder, the vapor makes drops of water. The largest drops fall down as rain or snow.



Around the world, most rain falls back into the ocean, but some falls on land, too. When that happens, some of the water goes into lakes and under the ground. Some of the water goes into rivers and then back to the ocean.

Every year, there are many storms over the oceans. The biggest storms are called hurricanes, but they have other names in some places. In Southeast Asia, hurricanes are called typhoons, while people in India call them tropical cyclones.

Hurricanes usually start over warm water in tropical areas. Winds come from many places and the air turns in circles. Warm water vapor goes high into the air and makes clouds. In the center of the hurricane, there is a place without any wind or rain. It's called the eye of the hurricane.

Hurricane winds are very fast – between 120 and 240 kilometers per hour. When hurricanes come to land, they can cause lots of damage to trees, roads, houses, and other buildings. Hurricanes also bring lots of rain, so there are often floods that cover houses and other buildings with water.



In 2005, Hurricane Katrina hit the south coast of the United States. The hurricane was more than 600 kilometers across, with winds over 250 kilometers per hour. There was lots of damage from floods along the coast, especially in New Orleans. More than one million people had to leave their homes and nearly 2,000 people died.

## Waves and Tides

When winds move over the ocean, they push the water and make waves on the surface, at the top of the water. Light winds make very small waves, called ripples. These small waves are only a few centimeters high and they go away when the wind stops.

Strong winds make large waves on the ocean. These waves can become very big when the wind blows for a long time. During hurricanes, the largest waves can be more than 25 meters high.

Large waves do not go away when the wind stops. These waves are called swells, and they get smaller after a long time, or stop when they come to land. When swells come to shallow water, they get higher and closer together. The water at the bottom slows down quickly. At the same time, the water at the top keeps moving. Finally, the top of the wave falls and breaks on the land.

Sometimes there are very big waves, called tsunamis. Winds don't start tsunamis. They happen when there is an earthquake under the ocean. The earthquake pushes a lot of water and makes a very big wave that travels through the ocean. In deep water, tsunamis can travel at 800 kilometers per hour. That is faster than most airplanes.

Waves in shallow water



When a tsunami comes to shallow water, it slows down very quickly and becomes much higher. When the wave finally breaks on the land, it causes lots of damage. In 2004, there was a big tsunami in the Indian Ocean. Thousands of people died and millions of people lost their homes.

When you are at the beach, you can see how the ocean gets higher and lower at different times of day. At high tide, the water goes up to its highest point, and at low tide it goes back down to its lowest point. This is because of the Moon and its gravity.



At high tide, the ocean level goes up on two sides of the planet. On one side, the ocean goes up because the Moon's gravity pulls the water away from Earth. On the other side, the ocean goes up because the Earth turns very quickly. At the same time, there are low tides on the other two sides of the planet. In most places around the world, there are two high tides and two low tides every day.

The Sun's gravity also affects the tides. When the Sun, the Moon, and Earth are in a line their gravities add together and the high tide becomes very high. These are called spring tides and they happen every two weeks, when there is a new Moon, and when there is a full Moon.

## Seagrass, Seaweed, and Algae

4

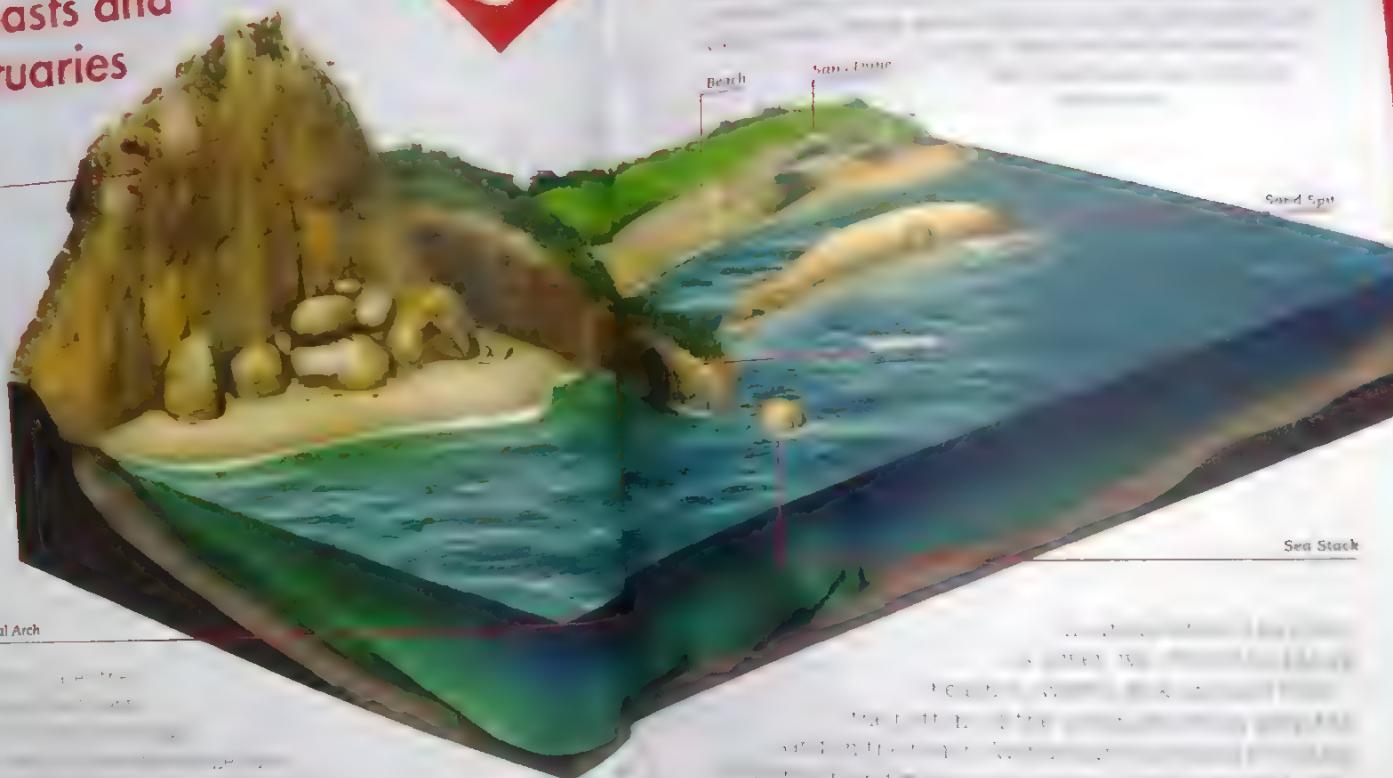




## Diatom shapes under a microscope

## Coasts and Estuaries

5



## Natural Arch

1

1860-1861

the first time in the history of the world, the  
whole of the human race, in all its  
diversity, has been gathered  
together in one place,  
and that is the  
city of the All-powerful.

# Marine Vertebrates

6

There are many formations of marine animals that live in the ocean. Some marine animals never live underwater. Other marine vertebrates spend some time in the ocean and land.

Some marine animals are vertebrates. This means they have a backbone inside their body. There are five types of vertebrate fish, mammals, birds, reptiles, and amphibians.

A sea turtle and some fish



Marine vertebrates include fish, birds, mammals, reptiles, and amphibians. Many marine vertebrates live in the ocean, but some live near land. Some marine vertebrates live in the ocean and land.

Reef fish live near coral reefs in the ocean, and there is lots of sunlight. They eat small fish, yellow tangs and clown fish. Many reef fish are small, so they can easily hide in small places. There are more reef fish in the world.

Oceanic fish spend most of their lives in the ocean far from land. Small fish live near the ocean floor, where there is sunlight and lots of algae. Large fish, such as tuna, eat the smaller fish. Another large oceanic fish is the ocean sunfish. It can weigh up to 2,000 kilograms.

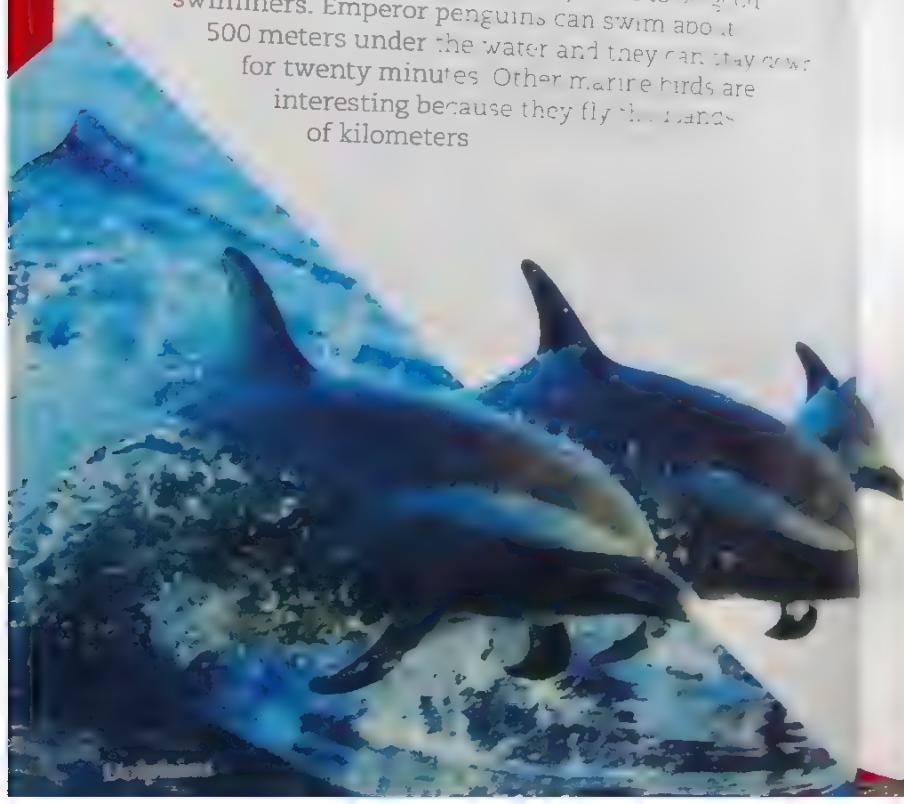
Deep sea fish live a long way under the surface of the ocean, where the water is dark and very cold. Deep sea fish cannot see well, so they use small lanterns. Some deep sea fish like lanternfish go up to the surface of the water at night to look for food.

This is  
because  
they have  
no teeth.

Marine mammals can stay underwater for hours in the water. Whales and dolphins can't live so they must hold their breath under water, like people. Dolphins can stay under the water for ten to fifteen minutes, and some whales can hold their breath for two hours.

Seals are marine mammals that spend a lot of time in the ocean, but they often leave the water to sleep. Many seals also have their babies on land. Many seals can live in cold areas, such as the Arctic and the Southern Ocean, but we also find them in warmer water.

Many marine birds eat fish so they need to be good swimmers. Emperor penguins can swim about 500 meters under the water and they can stay down for twenty minutes. Other marine birds are interesting because they fly thousands of kilometers.



# Marine Invertebrates

Marine invertebrates don't have a backbone. Many of them have a shell for protection. There are six main groups of marine invertebrates. They are sponges, cnidarians, echinoderms, worms, mollusks, and crustaceans.



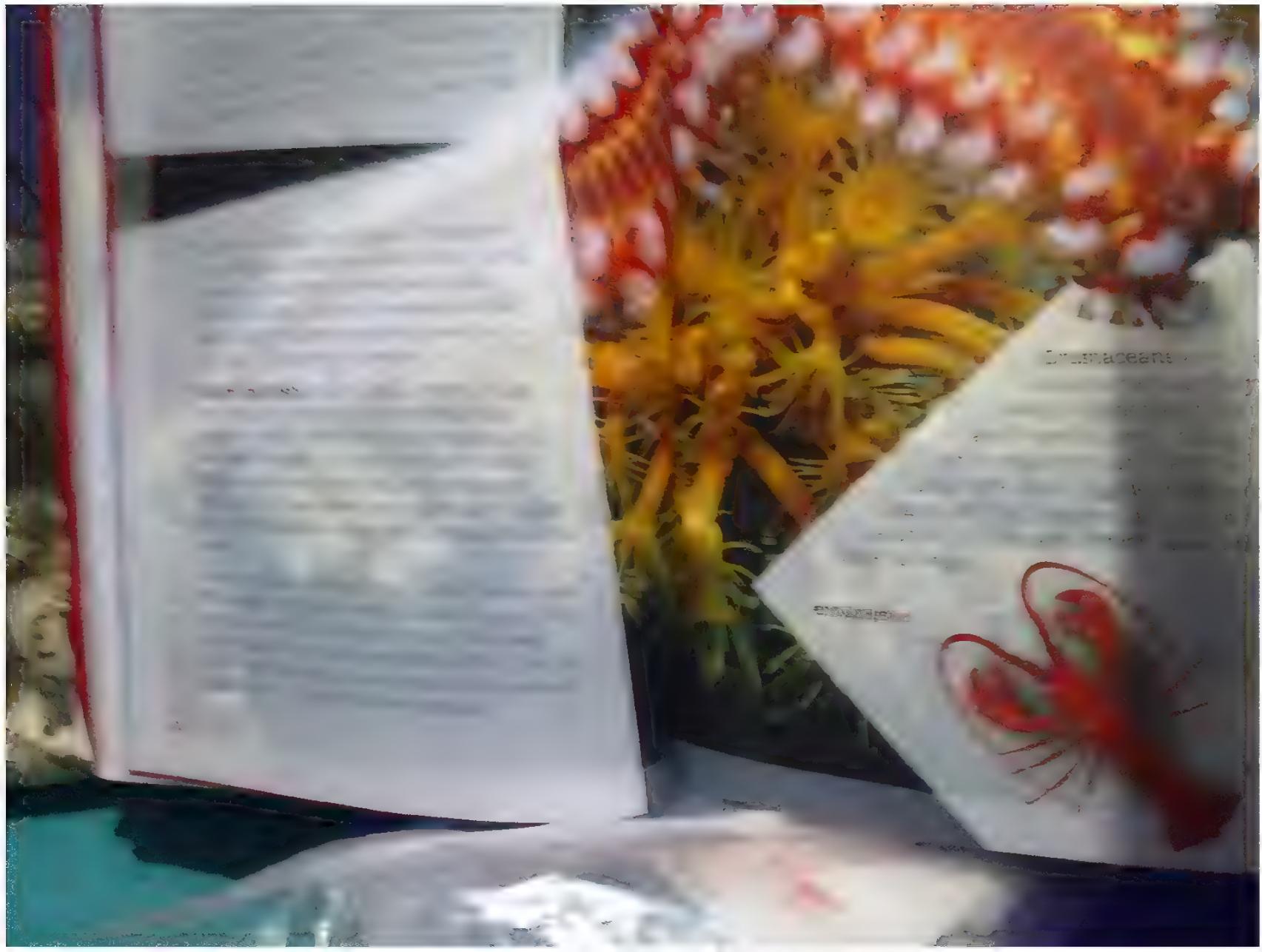
Sponges are very simple animals. They don't have a head or body parts. Sponges eat small living things that float in the water. Some sponges are very small, but the giant barrel sponge can be more than 10 meters high.

Cnidarians are simple animals, like sponges. But they have some special body parts, like a mouth with many tentacles around it. The tentacles are poison. Cnidarians can use them to catch fish.

Corals and anemones cannot move around. They spend their lives in one place. Corals usually live in coral reefs in large groups called colonies. Anemones usually live on rocks in shallow water near the coast. Jellyfish are different because they can float or swim from one place to another.

Echinoderms have bodies with five equal parts, so they often look like stars or flowers. On the bottom of their bodies, echinoderms have many small, thin feet. Echinoderms use these feet to hold things and pull their bodies around on the ocean floor. Sea urchins also have many long spines for protection.

Sea stars are carnivores, which means they eat other animals. Sea stars often eat other invertebrates, like sponges, corals, and mollusks. Sea urchins are different because they aren't usually carnivores. They are herbivores, so they eat seagrass, seaweed, and other types of algae.



## Coral Reefs

Coral reefs are home to many things, from simple algae and coral to bigger animals like crustaceans, and fish. About 90% of all the world's coral reefs are in the Pacific Ocean, the Indian Ocean, and the Red Sea. The other 10% are in the Caribbean Sea and other warm parts of the Atlantic Ocean.

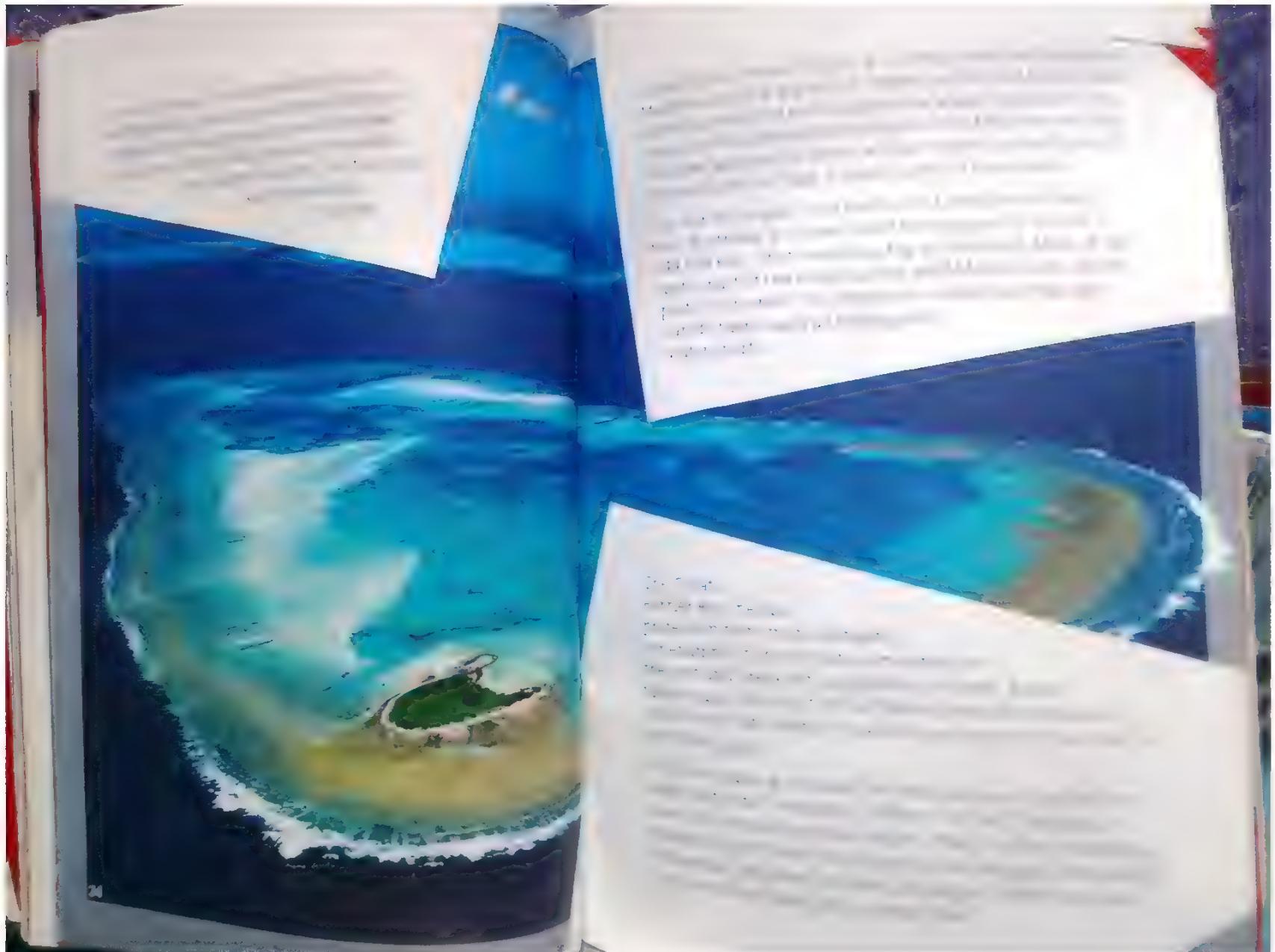


There are about 500,000 coral reefs in the world. About 100,000 new ones are born each year. Coral reefs grow at different rates. The rate is between 20 cm and 1 m per year. They are found in the tropics and the polar ocean.

Coral reefs are in the tropics in the Pacific, Indian, and Atlantic oceans. Some are in coral atolls, which are groups of islands. Some are in barrier reefs. Many are between the coast and the reef. Many small animals live in the reef. The reef is a safe place for them to live. The reef is also a home for many fish. The reef also keeps them safe from big waves and large animals that live in deep water.

Coral reefs grow very slowly, about 1 cm per year. Some corals have a special kind of algae that lives inside them. The coral uses sunlight to grow and it makes food for the coral. As coral grows, it makes a white mineral called calcium carbonate. This mineral makes the coral hard. The coral grows on top and the reef slowly gets bigger and bigger.

Special types of green algae grow between pieces of coral. This algae gets hold and holds the pieces of coral together. Other marine animals, such as sponges, oysters, and snails, also live in coral reefs. When these animals die, the hard parts of their bodies become part of the coral.



# Polar Oceans

There are two polar oceans. The Arctic Ocean is in the Northern Hemisphere. Near the North Pole, it is very cold. Near the South Pole, the Southern Ocean is very warm.

The Arctic Ocean is as deep as the West Indies, about 14,000 meters deep. There are lots of icebergs in the Arctic Ocean, and larger ones than in the Southern Ocean. We also see many small bergs. Bergs never last very long, because they float in the water, melting as they move across the ocean for many kilometers before they finally melt and disappear.

The water in the Arctic Ocean is the coldest in the world. In winter, the temperature dips to below zero. The water freezes over about 10% of the Arctic Ocean and becomes even thinner.

In the past there was a lot of whaling in the Arctic Ocean. Setting off from Europe, whalers would

under the Arctic ice, there aren't many plants, but there are lots of small fish and other marine animals to eat. About 300 kinds of bird also live in the Arctic or spend part of the year there. Many Arctic birds are white or grey, so they can hide easily in the snow. Some Arctic birds are Arctic terns and snowy owls.

Other marine mammals living in the Arctic Ocean are seals, and dolphins and whales. The most common whale is the narwhal, which has a long, hard tusk on its head. Narwhals are unusual because they are white all over. We also find killer whales in the Arctic, but they only spend part of their time in the water.

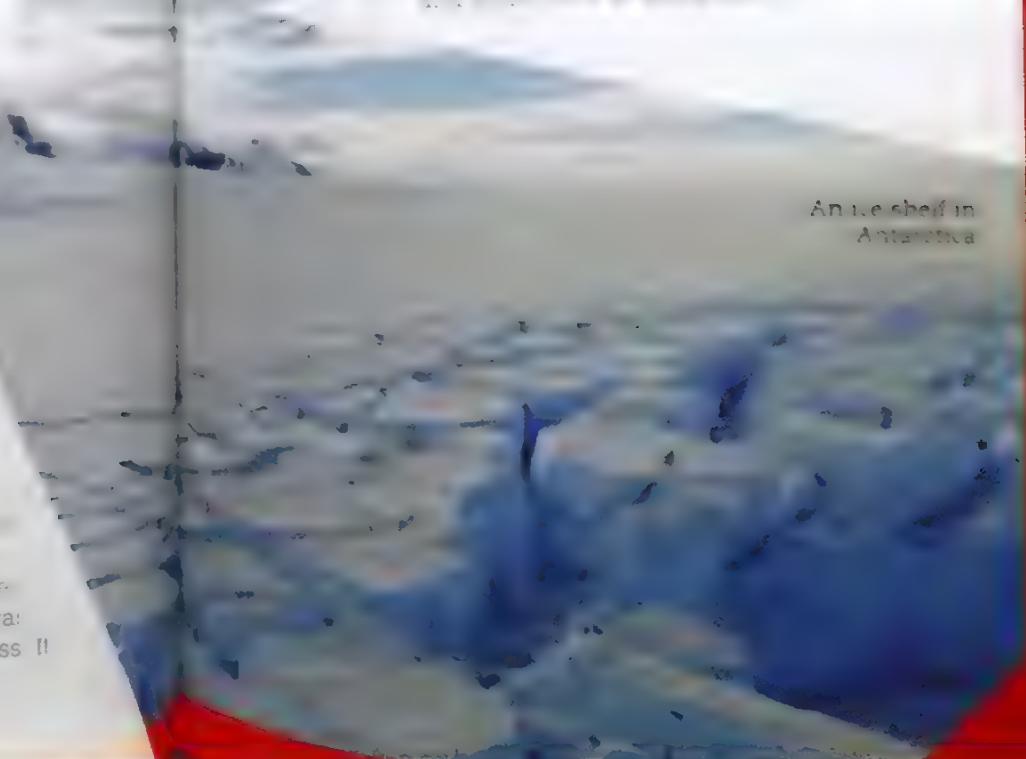


Whales in the Arctic Ocean

Antarctica has about 80 million people. It can be very cold in the winter and very warm in the summer. Antarctica is a continent and it is very deep ocean. It is also very dry. Antarctica is a very cold place. It is in the southern hemisphere.



## Anne's shelf in Argentina



# Food from the Ocean

Chapter

10



## Food from the Ocean

Chapter 10

Food from the Ocean

use nets to catch crustaceans. In fact, every year around the world catch about one million tonnes of fish. China is the country that catches about 40% of the world's total fish, followed by Canada and the United States, which catch every year.

Crustaceans like crabs and lobsters, for example, they use special traps in the sea to catch them. The crustaceans go into the trap and then they cannot get out again. They use traps to catch molluscs like oysters and mussels.



Some countries have farms that grow fish. Some farms grow fish on fish farms. Some farms are aquaculture farms. Some farms grow live oysters in the ocean. Some farms live inside tanks. In large tanks of water. There are also many different farms where the fish live in the ocean, but they stay in large enclosed areas. On fish farms the fish get lots of food every day so they grow very quickly. Some farms keep other marine animals too, such as crustaceans and molluscs.

In some countries seaweed is an important food and there are many farms that grow special types of seaweed. Kelp and nori are the most usual. Kelp is popular in Japan, China, Korea and other Asian countries. Many people include kelp in their diet because they are very healthy. In Japan, people use a lot of nori to wrap fish, and other Japanese dishes.

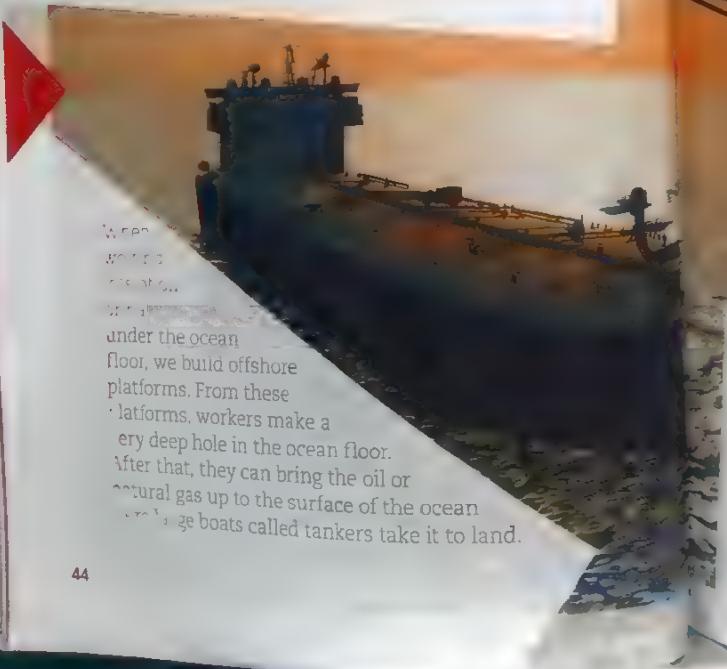
## Oceans and Energy

11

ocean energy is a very old and a  
natural energy source. It is found in  
the ocean, sea, rivers, lakes, and  
natural factors found under the ocean floor.  
With modern technology we can also get solar  
energy from ocean waves and tides.

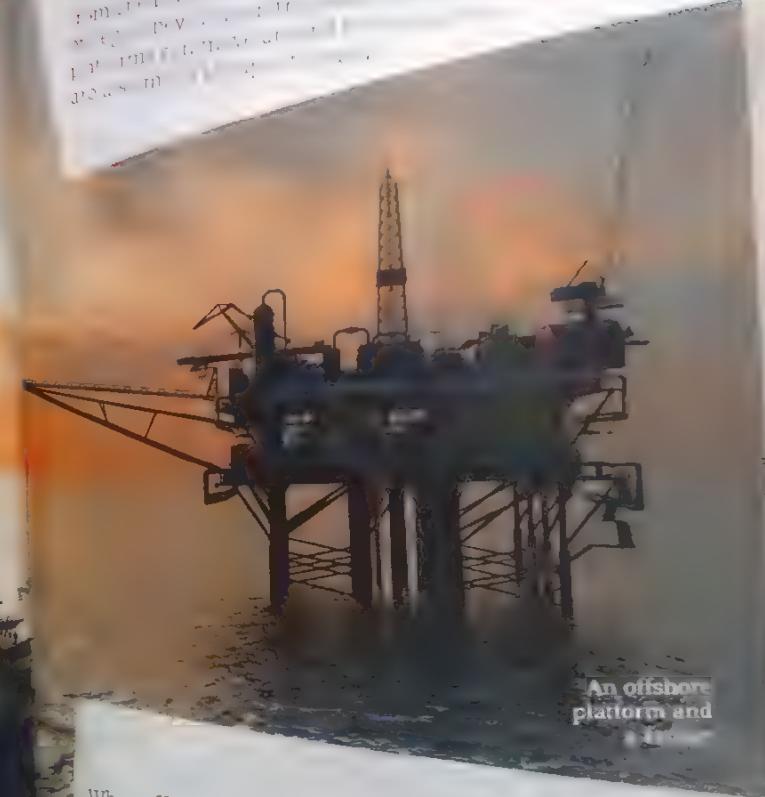
energy from the sun and nature, just that we don't use a lot of the coal or oil. We use lots of oil to make plastic and other things. We often use oil to heat water, cook our food and we pour oil into our cars and water. We can also use oil and natural gas to make electricity.

When we're working on an oil platform, we build it under the ocean floor, we build offshore platforms. From these platforms, workers make a very deep hole in the ocean floor. After that, they can bring the oil or natural gas up to the surface of the ocean. Large boats called tankers take it to land.



When offshore platforms are near land, it is hard to build long underwater pipes to get the oil and gas to land. Underwater pipelines are safer than tankers because waves and bad weather can't hit things in the water. Tankers can also hit things in the water, like other boats.

## An offshore platform and



As well as oil and gas, we can get energy from ocean, wind, waves, and tides. These types of energy are clean, and they don't make any pollution. They are also sustainable because we can use them again and again.

Offshore wind farms have many towers with turbines at the top. The turbines have long blades that turn in the wind and this makes electricity. Then underwater cables carry the electricity to the land. One of the largest wind farms in the world is the London Array, in the Thames Estuary in England. It has 175 turbine towers.

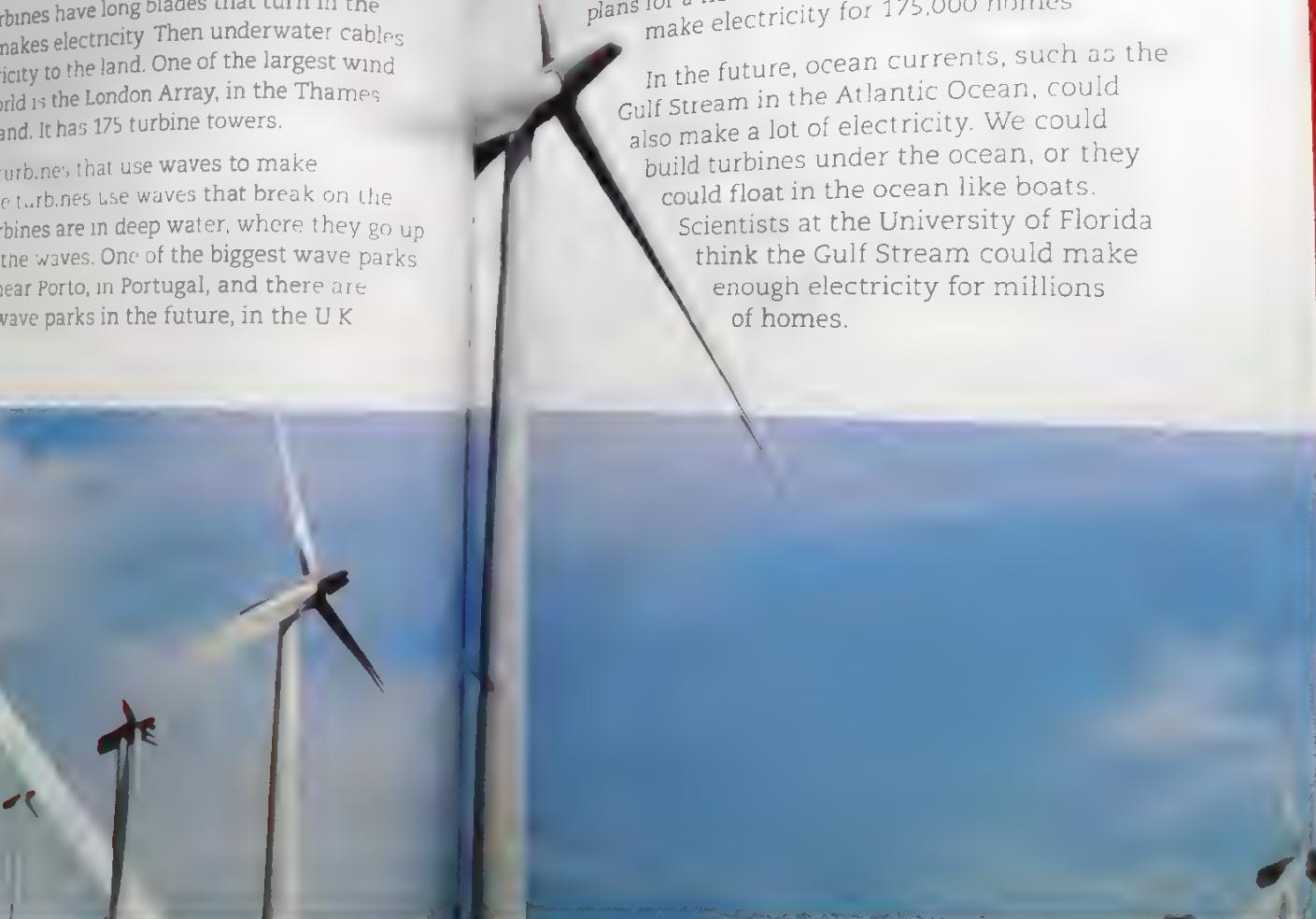
There are also turbines that use waves to make electricity. Some turbines use waves that break on the coast. Other turbines are in deep water, where they go up and down with the waves. One of the biggest wave parks in the world is near Porto, in Portugal, and there are plans for more wave parks in the future, in the UK and the US.

We also use ocean tides to make electricity. We can collect water at high tide and store it at low tide. When the water is let out, it turns turbines and makes electricity. We can also have underwater turbines with long blades that turn when the tide goes up and down. There are plans for a new tide park in Scotland that could make electricity for 175,000 homes.

In the future, ocean currents, such as the Gulf Stream in the Atlantic Ocean, could also make a lot of electricity. We could build turbines under the ocean, or they could float in the ocean like boats.

Scientists at the University of Florida think the Gulf Stream could make enough electricity for millions of homes.

Wind turbines on offshore towers



# Ocean Conservation

12



the 2nd and 3rd rank  
Tobacco and  
Cigarettes  
coffee, tea

3.  $\{W_i\}_{i \in \mathbb{N}}$

Garbage is another type of pollution that affects the oceans. When people throw garbage into the water, it sinks to the bottom and stays there for many years. It is common in areas where there are many people, such as beaches. The trash pollutes the water. This makes the water dirty and it isn't nice for people who live there.



Plastic is a type of material that is not biodegradable. This means that it does not break down over a long time. It is often used to make things like bags, bottles, and containers. Plastic is a problem because it can end up in the ocean. For example, there is a huge area of ocean called the Great Pacific Garbage Patch. Scientists are not sure what to do with this plastic and clean up the ocean. It will take many years. For now, we must not use plastic or we will pollute the ocean.

Plastic is also in the ocean because of climate change. Climate change is when the weather gets warmer. People burn oil, coal, and gas to heat their homes. This creates carbon dioxide into the air. This is bad for the planet because it traps heat from the sun. This is called the greenhouse effect.

### The Greenhouse Effect

1. Sunlight heats the Earth and the atmosphere.
2. Carbon dioxide and other gases in the atmosphere hold in the heat.
3. The Earth's temperature goes up.

Atmosphere



the ways we  
can learn it  
from the people  
of today and the people  
in the future

the ways we  
can learn it  
from the people  
of today and the people  
in the future

## Read pages 6 to 9.

## A Answer the questions.

- How much of Earth's surface do the oceans cover?  
About 70%.
- What percentage of Earth's water is salt water?  
About 97%.
- Which ocean is between Africa and Australia?  
The Indian Ocean.
- Which ocean is the smallest?  
The Arctic Ocean.
- What do we call a shallow area of ocean next to a continent?  
A continental shelf.
- How far under the water is Challenger Deep?  
About 11,000 meters.
- How much of Mauna Kea is under the ocean?  
About 5,800 meters.
- Where is the longest mountain range on Earth?  
Under the Atlantic Ocean.

## Read pages 10 to 16.

## A Are these sentences true or false? Write T or F.

- The water at the surface of the ocean becomes cooler at night.  T
- Cold currents move from the tropical zones to the polar zones.  F
- When the water vapor in the air gets colder, it evaporates.  F
- Ripples are big waves that keep moving when the wind stops.  F
- In hurricanes, the largest waves can be over 100 meters high.  F
- Tsunamis get much higher when they come to shallow water.  T
- Earth's tides depend on the gravity of the Sun and the Moon.  T
- Spring tides are very high tides that only happen in spring.  F

## Read pages 17 to 23.

## A Complete the descriptions with words from the box.

delta, diatom, giant kelp, headland, seagrass, seaweed, wetland

- It looks like a plant but is an algae.  seaweed
- It is a very small algae that can have many different shapes.  diatom
- It is an underwater plant that has leaves, roots and flowers.  seagrass
- It is a special type of algae that can be 65 meters long.  giant kelp
- It is a low, flat area where water covers most of the land.  wetland
- It is a high, rocky coastal area that goes out into the water.  headland
- It is a V-shape that forms where some rivers meet the ocean.  delta

## Read pages 24 to 31.

## A Match the beginnings and endings of these sentences.

1. A vertebrate is an animal...	a. but they spend their lives in the water.
2. Sardines are coastal fish...	b. that don't have a head or body parts.
3. Whales and dolphins look like fish...	c. that move in groups called schools.
4. Sea turtles and snakes need air...	d. but they are marine mammals.
5. Sponges are simple animals...	e. that has a backbone inside its body.
6. Echinoderms are invertebrates...	f. that often look like stars or flowers.

Read pages 32 to 39.

A Check the best answers.

1. Coral grows best in water that...
  - a. is shallow and warm
  - b. is warm and deep
  - c. is shallow and cold
2. Calcium carbonate is a white mineral that...
  - a. makes food for coral
  - b. makes coral hard
  - c. makes coral bigger
3. Atolls are islands that sometimes form...
  - a. in the Indian Ocean
  - b. in polar oceans
  - c. on underwater mountains
4. The Great Barrier Reef is about the same size as...
  - a. Australia
  - b. Germany
  - c. The Maldives
5. The Arctic Ocean is... than the Southern Ocean.
  - a. smaller and shallower
  - b. larger and deeper
  - c. deeper and colder
6. The Ross Ice Shelf is...
  - a. 240 km long
  - b. on the coast of Antarctica
  - c. 4,770 meters deep
7. Beluga whales are unusual because they...
  - a. have long tusks
  - b. eat dolphins
  - c. are all white
8. Krill are an important food...
  - a. for whales
  - b. for polar bears
  - c. for snowy owls

Read pages 40 to 47.

A Complete the sentences with words from the box.

rafts nets park pipelines platforms seafood traps turbines

1. Fish is about 84% of all the seafood that we catch and eat.
2. Most fishing boats use large nets or long lines to catch fish.
3. Some fishermen leave traps with food inside to catch lobsters.
4. On some fish farms, the fish live in lakes or large tanks of water.
5. We can build offshore platforms to get oil from under the ocean.
6. Underwater pipelines can carry oil more safely than tankers.
7. Wind turbines have long blades that turn to make electricity.
8. They are building a large tide park in the ocean near Scotland.

Read pages 48 to 53.

A Answer the questions. Suggested answers.

1. Why should we help conservationists to protect the oceans?  
Oceans are important to all life, including plants, animals, and people.
2. How does acid rain affect the oceans?  
Acid rain damages marine life, especially coral, algae, and mollusks.
3. How much plastic do we put into the ocean every year?  
We put more than eight million tonnes of plastic into the ocean every year.
4. Why is there so much carbon dioxide in the air now?  
We are burning a lot of oil, gasoline, and natural gas.
5. How do higher temperatures make the oceans deeper?  
When temperatures are higher, lots of polar ice melts and becomes water.
6. What happens to coral when the water gets too warm?  
The coral becomes unhealthy and it can die.

## 1 Are these sentences true or false? Write T or F.

1. The areas near Earth's poles usually get more sunlight.  F
2. Strong winds and temperature changes can make currents.  T
3. There are more hurricanes in places where the ocean is cold.  F
4. When a hurricane comes to land, there are often floods.  T
5. When there is a big tsunami, it can cause earthquakes.  F
6. Seagrass grows where the water is shallow.  T
7. Seaweed and diatoms are different types of algae.  T
8. We need algae because it gives us lots of carbon dioxide.  F

## 2 Read the sentences and circle the correct words.

1. Waves can erode holes in rocky headlands and create sea arches / cliffs.
2. Winds can create sand bars / dunes when they move the sand on beaches.
3. Estuaries / wetlands, river water meets with salty water from the ocean.
4. Coastal spits / lagoons are lakes that form at the end of some estuaries.
5. Oceanic / Reef fish are often small, so they can hide easily in small places.
6. Seals are mammals, so they can't / must hold their breath under water.
7. All / crustaceans / worms have a special shell called an exoskeleton.

## 3 Answer the questions. Suggested answers.

1. Which two oceans have the most coral reefs? Why?

The Pacific and Indian oceans have the most coral reefs.

The water is warmer there.

2. Why do many marine animals live near coral reefs?

The reef protects them from waves and there is lots of algae to eat there.

3. Why are many Arctic birds and mammals white?  
It is difficult to see white animals in the snow and ice, so they can hide more easily.

4. Why aren't there many plants in the Southern Ocean?  
The Southern Ocean is very deep and dark, and the water is also very cold.

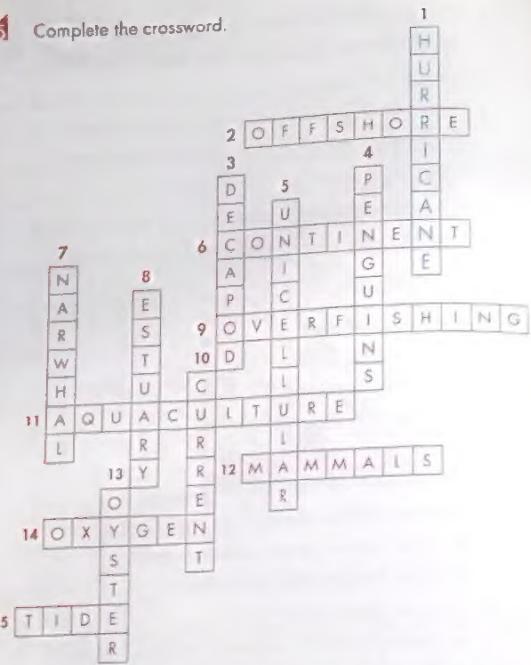
5. Which fishing boats can stay away for a long time? Why?  
Bigger boats can stay away longer because they have large refrigerators.

## 4 Check the best answers.

1. About 30% of our oil and gas...
  - comes from clean energy.
  - comes from under the ocean floor.
  - is in large boats called tankers.
2. The electricity from offshore tide parks...
  - moves turbines when the tide goes down.
  - makes a lot of air and water pollution.
  - travels through underwater cables.
3. The Gulf Stream current could...
  - make electricity for millions of people.
  - float in the ocean like a big boat.
  - use the wind to make energy.
4. Some oil spills happen when...
  - people throw waste into the water.
  - there are problems on offshore platforms.
  - water gets into tankers and pipelines.
5. The carbon dioxide that we put into the air...
  - makes our oceans and planet too warm.
  - causes more hurricanes in polar zones.
  - can make coral reefs grow too fast.



Complete the crossword.



**Across**

- in the ocean, but near the coast
- a very large area of land
- when people catch too many fish
- keeping fish on a farm
- whales, dolphins, and seals
- a gas that we need to live
- when the ocean goes up and down

**Down**

- a big, dangerous storm
- any crustacean that has ten legs
- black and white birds
- with only one living cell
- a whale that has a long tusk
- where a big river meets the ocean
- a mollusk that has a hard shell

1. **OFFSHORE** affect make something change  
 2. **CONTINENT** algae very simple plants without leaves  
 3. **OVERFISHING** area a part of somewhere  
 4. **AQUACULTURE** backbone the big bone that goes down the back of an animal  
 5. **MAMMALS** breath the air that goes into a mammal's body  
 6. **OXYGEN** bristle short, thick hair  
 7. **TIDE** cable thick strong metal for carrying electricity  
 8. **YACHT** cliff high rock with a very steep side  
 9. **WEATHER** climate the weather in a place  
 10. **COAST** coast the land beside the ocean  
 11. **CONSERVATION** protecting the environment  
 12. **CONTINENT** continent a large area of land  
 13. **COVER** go over something  
 14. **CURRENT** the movement of water across an ocean  
 15. **DAM** damage break something  
 16. **EARTHQUAKE** when the ground moves  
 17. **ENERGY** something that can give power  
 18. **EQUAL** the same as  
 19. **ERODE** make something smaller, little by little  
 20. **FOAM** stay on the surface of the water  
 21. **FLOOD** a lot of water covering an area  
 22. **GARBAGE** things that people throw away

**gas** like air: not solid or liquid

**gravity** this pulls things down towards the ground

**grow** get bigger

**lake** a large area of water

**mammal** an animal that has live babies

**melt** change from ice to water

**microscope** something that can make small things look larger

**mineral** a natural thing that we find on or under the ground

**mountain** a high place

**net** material with holes for catching fish

**oil** a thick liquid used as a fuel

**pipeline** a long metal or plastic thing that oil or gas can go through

**planet** a large round thing which goes around a star

**plastic** a light, often colored, material made from oil

**poisonous** can cause sickness or death

**polar bear** a large white mammal that lives in the Arctic

**pollution** making water, land, or air dirty

**reptile** an animal that has cold blood and lays eggs

**root** the part of a plant that is in the ground

**sand** very small pieces of rock

**segment** a part of something

**shallow** not deep

**shell** the hard outside part of some animals

**shine** the sun shines

**snake** a long, often dangerous, reptile with no legs

**solid waste** garbage that is hard, not liquid

**spill** flowing outside of a container or pipe

**spine** a sharp part on the outside of a plant or animal

**storm** very bad weather with strong winds

**surface** the top of something

**tank** a large thing that holds water

**tide** the rise and fall of the ocean every 12 hours

**trap** something for catching animals

**turtle** an animal with a shell that lives in the ocean

**tusk** a very long sharp tooth

**vapor** in the form of a gas

**wave** a high line of water that goes across an ocean

**whale** a very large mammal that lives in the ocean